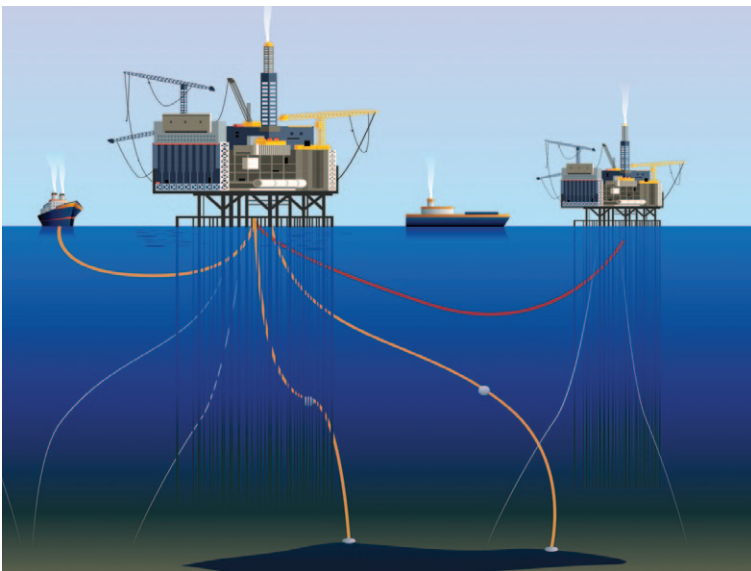


# Collaboration Shortens Development Time for High-Speed, Large-Area Metal Cladding Technology that Extends Steel Life

*Applications in oil and gas, aerospace, defense, infrastructure, and marine industries*



Collaboration with NASA's Glenn Research Center enabled MesoCoat, Inc. to reduce significantly the time it took to develop and validate a high-speed, large-area metal and ceramic cladding technology. MesoCoat's CermaClad™ technology uses a high intensity light source to rapidly fuse corrosion- and wear-resistant alloy, metal, and ceramic coatings onto steel pipes, plates, and bars. The CermaClad system provides a quickly applicable (15-100 times faster) and environmentally friendly method for extending the maintenance life of steel structures such as oil and gas pipes, bridge beams, ships, slurry lines, and mining equipment. A Space Act Agreement with NASA provided MesoCoat with access to Glenn's facilities and expertise, shortening development time by years and enabling the company to refine and validate its processes.

CermaClad is a trademark of MesoCoat, Inc.

## Benefits of Collaboration

- MesoCoat benefitted from access to Glenn's expertise and facilities, which were key to helping the company shorten development time and refine and validate the CermaClad system.
- NASA gained a reconfigured arc lamp that it can apply to its work with environmental and thermal barrier coatings used in numerous fundamental aerospace programs.
- U.S. jobs were created as MesoCoat developed the technology; job opportunities will increase as the company commercializes its cladding and coating products.
- The newly developed cladding techniques enable an improved microstructure that will combat corrosion and extend maintenance life of steel infrastructures used for bridges, roads, and buildings.

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## On the Record

“Our collaboration with NASA allowed us to move ahead much more quickly than we would have been able to otherwise. Additionally, working with materials experts at Glenn provided access to more input and ideas as well as equipment that enabled us to proceed with testing.”—*Greg Engleman, Chief Technical Officer, MesoCoat, Inc.*

“As a result of our work with MesoCoat, we’ve been able to reconfigure our high intensity arc lamp and can apply what we’ve learned to our work with environmental and thermal barrier coatings. Both MesoCoat and NASA now have fast access to an advanced system that’s inexpensive to run.”—*Martha Jaskowiak, Materials Science Engineer, NASA’s Glenn Research Center*

## About MesoCoat

Headquartered in Euclid, Ohio, MesoCoat combines its patented nanocomposite microstructured materials with high-speed, large-area fusion cladding and coating processes to provide environmentally friendly metal finishing technologies. Initially focusing on selected niches in the oil and gas, aerospace, defense, infrastructure, and marine industries, the company also intends to address maintenance and repair needs in the mining, transportation, construction, and utilities markets.

## Technology Origins

After spinning out from its parent company, Powdermet, Inc., in 2008, MesoCoat secured commercialization rights to the metal cladding system from the Department of Energy’s Oak Ridge National Laboratory, which provided expertise in arc lamp technology. The CermaClad technology uses an HDIR arc lamp to fuse and bond advanced wear- and corrosion-resistant materials to metal surfaces. The resulting metallurgical cladding, which can be applied at rates 15-100 times faster than competitive weld overlay or laser cladding technologies, is expected to extend the maintenance life of steel structures for up to 100 years.

Initially, MesoCoat plans to use the CermaClad system to apply corrosion- and wear-resistant cladding on the inner surfaces of oil and gas pipelines. Other potential applications include corrosion-resistant coatings for decks, ballast, and cargo tanks on ships, slurry lines, mining equipment, and on infrastructures for bridges, roads, and buildings. According to the company, the CermaClad system will be comparable in price to currently used protection methods, and will provide the lowest life-cycle cost in several applications.

## The Collaboration Process

The Space Act Agreement with NASA allows MesoCoat to use Glenn’s 200-kilowatt arc lamp system. NASA originally used its arc lamp to simulate heat fluxes that occur during the reentry of spacecraft into Earth’s atmosphere and for thermal testing of combustor liners. However, after reconfiguring the lamp to meet MesoCoat’s needs, Glenn innovators are now able to use the lamp in a different manner that enables high throughput validation and testing of environmental and thermal barrier coatings used in aerospace programs. Additionally, Glenn’s materials experts are helping MesoCoat develop appropriate heating cycles and treatment conditions that enable further development of these coatings.

## Gearing Up for Commercialization

MesoCoat is developing a production system at a new Eastlake, Ohio facility. The company is also constructing a full-scale manufacturing facility in Euclid, where it expects to begin producing up to 10 kilometers of clad pipe as small as 7.5 inches in diameter in mid 2012. Job opportunities will increase as MesoCoat commercializes this coating technology.

## For More Information

If you would like additional information about Glenn’s technology transfer opportunities, please contact:

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